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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,539	09/29/2003	Koichiro Tanaka	0756-7204	7494
31780	7590	12/15/2005	EXAMINER	
ERIC ROBINSON PMB 955 21010 SOUTHBANK ST. POTOMAC FALLS, VA 20165			LE, DUNG ANH	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/671,539	<b>Applicant(s)</b> TANAKA, KOICHIRO	
	<b>Examiner</b> DUNG A. LE	<b>Art Unit</b> 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 6 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 28-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

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## DETAILED ACTION

### Priority

Acknowledge is made of applicants' claim for foreign priority base on an application 2002-291545 filed in Japan on 10/03/2002.

It is noted that Applicants have filled a certified copy of said application as required by U.S.C 119, which papers have been placed of record in the file.

### Oath/Declaration

The oath/declaration filed on 9/29/2002 is acceptable.

### Election/Restriction

Application's election without traverse of Group II (Claims 28-51) drawn to process of making a semiconductor device is acknowledged for prosecution in the subject application . Applicant canceled 1-27. Claims 28 and 43 have been amended, and new claims 52-66 have added. Thus, claims 28-66 are pending for examination.

### Information Disclosure Statement

This office acknowledges of the following items from the Applicant:

Information Disclosure Statement (IDS) filed on 9/29/04 and 9/14/05 and made of record . The references cited on the PTOL 1449 form have been considered.

### **Specification**

The specification is objected to for the following reason:

The title of the invention is not descriptive.

A new title is required that is clearly indicative of the invention to which the claims are directed (see MPEP § 606.01).

A new abstract is required that is clearly indicative the invention to which the claims are directed.

Note that, the claims are directed to a method of making a semiconductor device instead of to a semiconductor device.

### **Claim Rejections**

#### **Claim Rejections - 35 USC § 112**

Claims 31- 33, 39- 41, 48- 50, 55-57 and 63- 65 rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 31, 32 and 33, the language of “ the laser oscillator ” is insufficient antecedent basis for this limitation in the claim, claim 28 provides the antecedent basic for this term.

In claims 39, 40 and 41, the language of “ the laser oscillator ” is insufficient antecedent basis for this limitation in the claim, claim 35 provides the antecedent basic for this term.

In claims 48, 49 and 50, the language of “ the laser oscillator ” is insufficient antecedent basis for this limitation in the claim, claim 43 provides the antecedent basic for this term.

In claims 55, 56 and 57, the language of “ the laser oscillator ” is insufficient antecedent basis for this limitation in the claim, claim 52 provides the antecedent basic for this term.

In claims 63, 64 and 65, the language of “ the laser oscillator ” is insufficient antecedent basis for this limitation in the claim, claim 59 provides the antecedent basic for this term.

**Set of claims 28-34**

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application

filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 28- 34 are rejected under 35 USC 102 (e) as being anticipated by Yamazaki (2004/0106237 A1).**

Yamazaki discloses a method of manufacturing a semiconductor device comprising:

forming an amorphous semiconductor film 403 over a substrate 401, see [0065]; and

scanning a surface of the amorphous semiconductor film with a laser light whose beam spot on the surface to be irradiated has a line shape or elliptical shape beam spot [0068];

wherein a scanning speed of the laser light is changed (refer to figs. 7a-8b and related text).

**Regarding claim 29**, wherein the scanning speed of the laser light is determined based on an energy distribution obtained by a means for focusing the laser light [0030, 0030 and 0053].

**Regarding claim 30**, wherein the scanning speed of the laser light is changed so that an irradiation energy on the surface to be irradiated is homogenized. [0066]

**Regarding claim 31**, wherein the laser oscillator is a continuous oscillation solid laser [0032].

**Regarding claim 32**, wherein the laser oscillator is at least one selected from the group consisting of a continuous oscillation YAG laser, YVO<sub>4</sub> laser, YLF laser, YAlO<sub>3</sub> laser, Y<sub>2</sub>O<sub>3</sub> laser, Alexandrite laser, and Ti: Sapphire laser [0030].

**Regarding claim 33**, wherein the laser oscillator is one of a continuous oscillation Ar laser or Kr laser (last lines of [0030]).

**Regarding claim 34**, wherein the laser light is a harmonic wave [0068].

**Set of claims 35- 42**

**Claims 35- 42 are rejected under 35 USC 102 (e) as being anticipated by Yamazaki (2004/0106237 A1).**

Yamazaki teaches a method of manufacturing a semiconductor device comprising:

forming an amorphous semiconductor film 403 over a substrate 401; and  
scanning a surface of the amorphous semiconductor film with a laser light whose beam spot on the surface to be irradiated has a line shape or an elliptical shape beam spot [0068],

wherein the shape of the beam spot is kept constant during the scanning [0057 and 0060], and

wherein the scanning speed of the laser light is changed ([0068] and figs 7 and 8).

**Regarding claim 36**, wherein the shape of the laser light is kept constant by adjusting a focal point of the laser light on the surface to be irradiated [0057 and 0060].

**Regarding claim 37**, wherein the scanning speed of the laser light is determined based on an energy distribution obtained by a means for focusing the laser light [0030, 0030 and 0053].

**Regarding claim 38**, wherein the scanning speed of the laser light is changed so that an irradiation energy on the surface to be irradiated is homogenized. [0066]

**Regarding claim 39**, wherein the laser oscillator is a continuous oscillation solid laser [0032].

**Regarding claim 40**, wherein the laser oscillator is at least one selected from the group consisting of a continuous oscillation YAG laser, YVO<sub>4</sub> laser,



YLF laser, YAlO<sub>3</sub> laser, Y<sub>2</sub>O<sub>3</sub> laser, Alexandrite laser, and Ti: Sapphire laser  
[0030].

**Regarding claim 41**, wherein the laser oscillator is one of a continuous oscillation Ar laser or Kr laser (last lines of [0030]).

**Regarding claim 42**, wherein the laser light is a harmonic wave [0068].

**Set of claims 43-51**

**Claims 43- 51 are rejected under 35 USC 102 (e) as being anticipated by Yamazaki (2004/0106237 A1).**

Yamazaki teaches a method of manufacturing a semiconductor device comprising:

forming an amorphous semiconductor film 403 over a substrate 401; and  
converting a laser light emitted from a laser oscillator so that a beam spot on a surface of the amorphous semiconductor film becomes a line shape or an elliptical shape beam spot [0068] and [0057];

deflecting a converted laser light and scanning the laser light while keeping the shape of laser light constant on the surface to be irradiated [0068] and [0057];

wherein a scanning speed of the laser light is changed by controlling an operating speed of the deflecting means [0068] and [0057].

**Regarding claim 44**, wherein the means for deflecting the converted laser light and the means for scanning while keeping the deflected laser light constant has at least one of a galvanometer mirror, a polygon mirror, an  $f_0$  lens, and a telecentric  $f_0$  lens [0056-0057].

**Regarding claim 45**, wherein the shape of the laser light is kept constant by adjusting a focal point of the laser light on the surface to be irradiated [0057 and 0060].

**Regarding claim 46**, wherein the scanning speed of the laser light is determined based on an energy distribution obtained by a means for focusing the laser light [0030, 0030 and 0053].

**Regarding claim 47**, wherein the scanning speed of the laser light is changed so that an irradiation energy on the surface to be irradiated is homogenized. [0066]

**Regarding claim 48**, wherein the laser oscillator is a continuous oscillation solid laser [0032].

**Regarding claim 49**, wherein the laser oscillator is at least one selected from the group consisting of a continuous oscillation YAG laser,  $YVO_4$  laser, YLF laser,  $YAlO_3$  laser,  $Y_2O_3$  laser, Alexandrite laser, and Ti: Sapphire laser [0030].

**Regarding claim 50**, wherein the laser oscillator is one of a continuous oscillation Ar laser or Kr laser (last lines of [0030]).

**Regarding claim 51**, wherein the laser light is a harmonic wave [0068].

**Set of claims 52- 58**

**Claims 52- 58 are rejected under 35 USC 102 (e) as being anticipated by Yamazaki (2004/0106237 A1).**

Yamazaki discloses a method of manufacturing a semiconductor device comprising:

forming an amorphous semiconductor film 403 over a substrate 401, see [0065]; and

scanning a surface of the amorphous semiconductor film with a laser light [0068];

wherein a scanning speed of the laser light is changed (refer to figs. 7a-8b and related text).

**Regarding claim 53**, wherein the scanning speed of the laser light is determined based on an energy distribution obtained by a means for focusing the laser light [0030, 0033 and 0053].

**Regarding claim 54**, wherein the scanning speed of the laser light is changed so that an irradiation energy on the surface to be irradiated is homogenized. [0066]

**Regarding claim 55**, wherein the laser oscillator is a continuous oscillation solid laser [0032].

**Regarding claim 56**, wherein the laser oscillator is at least one selected from the group consisting of a continuous oscillation YAG laser, YVO<sub>4</sub> laser, YLF laser, YAlO<sub>3</sub> laser, Y<sub>2</sub>O<sub>3</sub> laser, Alexandrite laser, and Ti: Sapphire laser [0030].

**Regarding claim 57**, wherein the laser oscillator is one of a continuous oscillation Ar laser or Kr laser (last lines of [0030]).

**Regarding claim 58**, wherein the laser light is a harmonic wave [0068].

**Set of claims 59- 66**

**Claims 59- 66 are rejected under 35 USC 102 (e) as being anticipated by Yamazaki (2004/0106237 A1).**

Yamazaki teaches a method of manufacturing a semiconductor device comprising:

forming an amorphous semiconductor film 403 over a substrate 401; and

scanning a surface of the amorphous semiconductor film with a laser light [0068],

wherein the shape of the beam spot is kept constant during the scanning [0057 and 0060], and wherein the scanning speed of the laser light is changed ([0068] and figs. 7 and 8).

**Regarding claim 60**, wherein the shape of the laser light is kept constant by adjusting a focal point of the laser light on the surface to be irradiated [0057 and 0060].

**Regarding claim 61**, wherein the scanning speed of the laser light is determined based on an energy distribution obtained by a means for focusing the laser light [0030, 0030 and 0053].

**Regarding claim 62**, wherein the scanning speed of the laser light is changed so that an irradiation energy on the surface to be irradiated is homogenized. [0066]

**Regarding claim 63**, wherein the laser oscillator is a continuous oscillation solid laser [0032].

**Regarding claim 64**, wherein the laser oscillator is at least one selected from the group consisting of a continuous oscillation YAG laser, YVO<sub>4</sub> laser,

YLF laser, YAlO<sub>3</sub> laser, Y<sub>2</sub>O<sub>3</sub> laser, Alexandrite laser, and Ti: Sapphire laser  
[0030].

**Regarding claim 65**, wherein the laser oscillator is one of a continuous oscillation Ar laser or Kr laser (last lines of [0030]).

**Regarding claim 66**, wherein the laser light is a harmonic wave [0068].

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.


A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung A. Le whose telephone number is (571) 272-1784. The examiner can normally be reached on Monday-Tuesday and Thursday 6:00am- 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The central fax phone numbers for the organization where this application or proceeding is assigned are (571)272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DUNG A. LE   
Primary Examiner  
Art Unit 2818